- Page 2, lines 16-27

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claims 1-18, 20-22, 28-29, 36-40, and 42 Under 35 USC §112, 2nd Paragraph

This rejection has been addressed by:

- amending claim 1 to specify that what is calculated is "track data...for controlling movement of an engraving tool along a tool track," (support for this amendment is found in lines 17-27 on page 2 of the original specification, which discuss the data, now referred to as "track data," used to move the engraving tool long the track);
- cancelling claim 3;
- amending claim 20 to recite –multiple– engraving tools, as suggested by the Examiner; and
- amending claim 28 to specify that the microengraving is a further element of the plate recited in claim 24, and that it represents information, as explained in page 7, lines 13-18 and page 9, lines 14-27 of the original specification.

In addition, it is respectfully noted that claims 1 and 24 have been amended to more positively recite an intaglio printing plate having the feature (inherent in intaglio printing plates) that the engraved depressions define the printing portions of the intaglio printing plate, *i.e.*, that they are arranged to be filled with ink and thereby form a printing part of the surface of the intaglio printing plate, and that claim 24 has been amended to recite that the shapes of the meanders are "predetermined" (as opposed to random meanders that might be produced by chemical etching).

2. Rejection of Claims 1-10, 12-14, 16-18, 21-22, and 37-40 Under 35 U.S.C. §§102(b) or 103(a) in view of U.S. Patent No. Re. 28,747 (Graboyes), and Rejection of Claims 20 and 36 in view of the Graboyes Patent

This rejection is respectfully traversed on the grounds that the Graboyes patent discloses a method for engraving character printing wheels rather than intaglio printing plates. Letter printing wheels are structurally clearly distinguishable from intaglio printing plates in a number of respects. For example, in intaglio printing, color is transferred from the areas engraved into the surface rather than from the raised surface, and therefore printing wheels do not have flat top surfaces, as now recited in each of the currently pending independent claims. Conversely, the depressions of letter printing wheels of the type disclosed by Graboyes are flat and smooth and do not define printing surfaces, as is also recited in each of the independent claims, and therefore there is no need to control the engraving tool within the desired contour in the manner claimed.

As pointed out in a previous response, formation of roughness structures in the printing wheel of Graboyes would actually degrade its performance, since if there were roughness structures present on the bottom or the flanks of a letter press printing plate such as plates 112 and 121 in Fig. 24 of Graboyes, these structures would, after a while, be filled with excessive printing ink which would deteriorate the printing result. In contrast, in intaglio printing plates, the depressions rather than raised surfaces are filled with printing inks and the printed picture is produced by the transfer of the printing ink from the depressions onto the substrate, the roughness structures serving to keep the inks in the depressions.

According to the teachings of Graboyes, the inside radius of a depression is engraved by a plurality of depths (see Figs. 22 and 23) so as to form steps in the corners of the flanks of the depression. These steps are subsequently **removed** in a separate manufacturing step, the resulting depression being flat and smooth not only at the bottom and the flanks but also in the inside corners of the flanks (col. 9, lines 47 to 68, and the cross-sectional view of Fig. 24). This is because in the type of letter printing disclosed by Graboyes, which involves directly application of ink from the surface of the engraved structure to a printing medium, sharpness of corners is critical while the bottoms of the depressions are not critical to the end result (except

for the negative effect of retaining excess printing ink). As a result, Graboyes could not logically be suggestive of (or anticipate) structures designed to retain printing ink, the amount of ink in the depressions being critical to the end result, which involves transferring the ink **from the depressions rather than from the raised portions** onto a substrate.

> The Examiner is again reminded that, as stated in **MPEP 2143.02** (page 2100-111):
>
> *If the proposed modification would render the prior art invention being modified **unsatisfactory for its intended purpose**, then there is no suggestion or motivation to make the proposed modification*" (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

The claimed invention has no advantages in the raised printing context of Graboyes, and significant potential disadvantages, and therefore the Graboyes patent could not possibly have anticipated or suggested the present invention to a person of ordinary skill in the art, in the absence of improper hindsight. As a result, it is respectfully submitted that the rejections of claims 1-10, 12-18, 20-22, and 36-40 under 35 U.S.C. §§102(b) or 103(a) is improper and should be withdrawn.

3. Rejection of Claims 24 and 28-33 Under 35 USC §102(b) in view of U.S. Patent No. Re. 28,747 (Graboyes) or Under 35 USC §103(a) in view of the Graboyes Patent and U.S. Patent No. 4,972,323 (Cauwet), and Rejection of Claim 15 Under 35 USC §103(a) in view of the Graboyes and Cauwet patents

This rejection is respectfully traversed on the grounds that, as indicated above, the Graboyes patent concerns a type of printing in which one would never use the claimed method of forming structures at the bottom of depressions since such bottom depressions would only interfere with printing by attracting ink, without enhancing printing since it is the raised surfaces rather than the depressions that determine print quality. Forming the depressions in the claimed manner makes no sense in the context of letter printing since letter printing of the type disclosed in Graboyes concerns definition of raised surfaces and not depressions, and Graboyes actually removes the steps formed in the depressions to achieve smoothness rather than roughness. Since the Cauwet patent concerns engraving of small ornamental or utility objects and does not describe any sort of printing plate, the Cauwet patent could not possibly have motivated the

ordinary artisan to ignore the express teachings of Graboyes by modifying the letter printing wheel in a way that would render it useless for its intended function.

While intermediate steps in Graboyes involve the formation of steps at the edges of "depressions" between the raised structures (assuming for purposes of argument that the spaces around the raised surfaces can properly be called depressions), the resulting edge steps are subsequently removed. Cauwet does not include any teachings that contradict the specific disclosure in Graboyes concerning removal of the edge steps, much less a teaching of engraving roughness structures into an engrave depression for the purpose of facilitating numerical control and reproducibility of intaglio plate formation. Since Graboyes is concerned with smoothness, it makes no sense for Graboyes to use a method that will result in roughness structures at the bottoms of the depressions, and particularly one that has nothing to do with formation of printing wheels or plates. Therefore, Graboyes and Cauwet, considered individually or in any reasonable combination, could not reasonably have suggested the claimed method or the plates produced thereby, and withdrawal of the rejection under 35 USC §§102(b) or 103(a) is respectfully requested.

4. Rejection of Claims 1-3, 5-11, 14, 16-18, 20 and 36 Under 35 U.S.C. §103(a) in view of U.S. Patent No. 4,949,270 (Shima)

This rejection is respectfully traversed on the grounds that the method of Shima, like that of Graboyes, does not concern production of intaglio printing plates. While Shima discloses formation of pockets in a workpiece, the pockets milled in the workpiece of Shima are not suitable for being filled with printing ink, and the method of Shima does not include the step of producing at least one depression in the form of at least one line, the line defining a limited partial area of the surface, and an edge of the partial area defining a desired contour, claimed.

According to the Examiner, the claimed depressions and contours are suggested by Figs. 13 and 16 of Shima. However, while Figs.13 and 16 of Shima and the accompanying description suggest that it is known in the prior art to remove a predetermined area or "hollowing

out" by moving the engraving tool along adjacent paths, there is no disclosure to suggest the step of producing at least one depression in the form of a line, the line defining a partial area, and an edge of the partial area defining a desired contour. To the contrary, as pointed out in a previous response, the Shima patent teaches displaying the profile outline or contour on a display screen of a computer (Col. 1, lines 62-65; Col. 2, lines 45-46), successively positioning a cursor so as to enable its coordinates to be input at selected points on the display screen, and then calculating the tool path using the manually predetermined coordinates in order to hollow out the interior of the profile or contour displayed on the screen.

The Shima patent actually concerns so-called "pocket machining" for hollowing out the interior of the profile of a workpiece rather than engraving of printing or embossing plates. Shima is not concerned with micro-engraving to produce high-quality printed products, and Shima does not first define a desired contour on the plate by using a tool to produce at least one depression, the line defining a partial area, and an edge of the partial area defining a desired contour, and then controlling the movement of the engraving tool so that material of the partial area is removed within the desired contour.

Because the Shima does not teach or even suggest the claimed steps for producing an intaglio printing plate of the type claimed, it is respectfully submitted that the rejection of claims 1-3, 5-11, 14, 16-18, 20 and 36 under 35 U.S.C. §102(b) is improper and should be withdrawn.

5. Rejection of Claims 4, 12, 13, 15, and 39 Under 35 U.S.C. §103(a) in view of U.S. Patent Nos. 4,949,270 (Shima) and 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Cauwet patent fails to disclose or suggest the step of calculating a tool path by determining the outer contour and the desired depth of an area to be engraved, as claimed, so that the area enclosed by the outer contour can be engraved automatically and without specifically determining coordinates for the tool path. Instead, Cauwet specifically teaches renewal of engraving depth control signals "with each path,"

in a manner that appears to be similar to that of Shima but that is contrary to the method of the present invention.

Because Cauwet does not include any teachings that would have motivated the ordinary artisan to rely on the outer contour and desired depth when implementing a method of the type disclosed in Shima, it is respectfully submitted that the rejection of claims 4, 12, 13, and 15 under 35 U.S.C. §103(a) is improper and should be withdrawn.

6. Rejection of Claims 21 and 22 Under 35 U.S.C. §103(a) in view of U.S. Patent No. 4,949,270 (Shima), 4,972,323 (Cauwet), and 2,210,923 (Jacquerod)

This rejection is respectfully traversed on the grounds that the Jacquerod patent, like the Cauwet and Shima patents, fails to disclose or suggest the claimed step of calculating a tool path by determining the outer contour and the desired depth of an area to be engraved, which has the advantage that the area enclosed by the outer contour can be engraved automatically and without specifically determining coordinates for the tool path, and further on the grounds that the ordinary artisan would not have thought to combine a printing or embossing plate engraving method of the type disclosed by Jacquerod with the workpiece forming method of Shima, and the decorative article engraving method of Cauwet.

The Examiner is reminded that the ordinary artisan would not have had a template that would have highlighted which teachings in the references to take into account and which to ignore, and that therefore the references must be considered as a whole. The ordinary artisan would clearly have been aware that Shima teaches a workpiece forming method, that the teachings of Jacquerod concern an embossing plate, and that Cauwet teaches a decorative article engraving method. None of these patents contain any disclosure that could possibly have suggested combination of the diverse methods and structures disclosed therein, nor would such a combination have resulted in the claimed invention in the absence of significant modification of the disclosed methods and structures.

Because neither Cauwet nor Jacquerod includes any teachings that would have motivated the ordinary artisan to rely on the outer contour and desired depth when implementing a method of the type disclosed in Shima, it is respectfully submitted that the rejection of claims 4, 12, 13, and 15 under 35 U.S.C. §103(a) is improper and should be withdrawn.

7. Rejection of Claims 24 and 28-33 Under 35 U.S.C. §102(b) in view of U.S. Patent No. 2,210,923 (Jacquerod) or Under 35 U.S.C. §103(a) in view of the Jacquerod Patent and U.S. Patent No. 4,972,323 (Cauwet), and Rejection of Claim 42 Under 35 USC §103(a) in view of the Jacquerod and Cauwet Patents

This rejection is again respectfully traversed on the grounds that the Jacquerod and Cauwet patents fail to disclose or suggest a printing plate with a substructure engraved into at least one depression, as claimed, characterized in that the substructure is meander-shaped or extends at least in partial areas parallel to a direction of said at least one line, as opposed to formation of random structures in an intaglio plate by etching.

As pointed out in various previous responses, Jacquerod grains the bottoms of the intaglio lettering by an etching process, which results in a different structure than the engraving process of the claimed invention. The plate "... *is inked lightly if fine stippling is desired in the bottoms and heavily inked when coarse stippling is desired. The plate is then etched until the acid breaks the ink down and the bottoms of the incisions are formed in a stippled-effect design.*" (Page 2, col. 1, lines 24-29). The substructures of Jacquerod are random patterns of dimples in a stippled pattern 11a (Page 1, Col. 1, lines 43-46; Page 2, Col. 1, lines 40-41, 48-49) as seen in Figs. 1 and 3.

Although the recitation that the depression is in the form of a line, and that it includes a meander-shaped roughness structure is believed to distinguish Jacquerod, claim 24 has been further amended to recite that the meander-shape is a **predetermined shape**. This language clearly excludes structures where the meanders are randomly produced as a result of chemical etching.

The present invention does not involve etching to produce a random stippled-effect pattern but by engraving lines in the substructure having a specific, non-random, meandering or partially straight lines, *i.e.*, depressions engraved "in the form of a line," as recited in claim 24. As seen in Fig. 4, a contour (engraved) line is first made (#9) into the plate. Because of the size of the tool 14, the tool cannot completely remove the entire area with one pass and a residual area 16 is left. This residual area is removed by engraving in either a meander shape (Fig. 5(b)) or in a direction parallel to the contour lines (Fig. 5(c)) which defines the substructure. The roughness is based on the offset of the tool (Figs. 6(b) and (c)). Jacquerod teaches a random pattern produced by stippling using an etching technique and does not have a substructure having a specific shaped, *i.e.* meandering or partially straight lines using an engraving technique.

The Cauwet patent does not include any specific teachings concerning engraving meandering or partially straight substructures in a linearly engraved depression, and therefore could not have motivated the ordinary artisan to modify the teachings of Jacquerod to obtain the claimed invention, particular since Cauwet is not concerned with the manufacture of printing or embossing plates of the type disclosed by Jacquerod, but rather with the engraving of small ornamental or utility objects such as medals, jewelry or portraits.

The claimed substructure arrangement, in which **predetermined** meandering or partially straight lines are engraved into linearly engraved structures, lends itself to numerical control of plate formation, and is clearly distinguishable from the random substructure arrangement of Jacquerod. Moreover, the Cauwet patent includes no suggestion, either implied or express, that would have led one of ordinary skill in the art to modify the Jacquerod patent to include such structures.

Because Jacquerod does not teach the claimed inclusion of engraved meandering or partially linear substructures in engraved depressions that are predetermined and "in the form of a line," Jacquerod does not anticipate the claimed invention, and since Cauwet does not include any teachings that would have motivated the ordinary artisan to modify the plates of Jacquerod

to include such predetermined meandering or partially linear substructures, it is respectfully submitted that the rejections of claims 24, 28-33, and 42 under 35 U.S.C. §102(b) and §103(a) are improper and should be withdrawn.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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APPENDIX B
(Marked-Up Copy Of Amended Claims)

1. (Six Times Amended) A method for producing an [embossing] intaglio printing plate having a flat top surface with at least one depression in the form of a line brought into the surface of the [embossing] intaglio printing plate and arranged to be filled with printing ink during intaglio printing, comprising the steps of defining a limited partial area of the surface of the depression, an edge of the limited partial area defining a desired contour; calculating track data with aid of a computer program for controlling movement of an engraving tool along a tool track to be followed by the engraving tool within the desired contour based on the desired contour and a predetermined desired depth of the at least one depression; and controlling the movement of the engraving tool along said tool track according to said track data such that a material of said partial area is removed within the desired contour at the predetermined desired depth, said tool track being continuous, whereby said tool track is selected to produce predetermined.

20. (Twice Amended) The method of claim 1, characterized in that said plate is engraved with [several] multiple engraving tools simultaneously.

24. (Five Times Amended) An [embossing or] intaglio printing plate having a surface with at least one engraved depression in the form of a line, said at least one depression being arranged to be filled with printing ink during intaglio printing, said at least one depression having flanks, a bottom, and an engraved defined roughness structure for retaining the ink at a bottom of the at least one depression, wherein said defined roughness structure [is] has a predetermined meander-[shaped] shape or extends at least in partial areas in a predetermined direction parallel to a direction of said at least one line.

28. (Four Times Amended) The embossing or intaglio printing plate of claim 24, characterized in that the at least one depression further comprises micro-engraving that represents [additional] information.

APPENDIX D
(Marked-Up Copy Of Amended Paragraph)

Page 2, lines 16-27:

The inventive method preferably makes use of a data processing system which makes it possible to acquire, store and process two-dimensional line originals. The two-dimensional line original, which is for example produced in a computer or read in via input devices, can be processed with the ad of a suitable computer program so as to yield track data for controlling an engraving tool along a tool track. For this purpose one defines in a first working step from the two-dimensional line original a plane element which consists for example of a single line of the line original. The edge enclosing the line then defines a desired contour with is intersection-free. To produce the engraving one associates a depth profile with the interior of the plate element as the desired depth for the engraving, and then calculates from the desired contour data and the associated desired depth a tool track along which the engraving tool is guided and removes material within the plane element in a predetermined, non-random manner.